DOCUMENT RESUME

ED 397 394 CS 012 535

AUTHOR Macdonald-Ross, Michael; Scott, Bernard
TITLE Results of the Survey of OU Students' Reading Skills. Text and Readers Programme Technical Report No. 3.
INSTITUTION Open Univ., Walton, Bletchley, Bucks (England). Inst. of Educational Technology.
PUB DATE 95
NOTE 23p.; A separate two-page summary has been appended.
PUB TYPE Reports - Research/Technical (143)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Cloze Procedure; College Freshmen; Higher Education; Longitudinal Studies; *Reading Achievement; Reading Research; *Reading Skills
IDENTIFIERS *Academic Discourse; *Open University (Great Britain)

ABSTRACT

A study investigated the reading skills of entering students at the Open University. Just over 2,000 of the 3,000 students (representing 10% of all students taking courses at the foundation level) completed questionnaires that were mailed to them. Subjects completed 3 cloze tests, graded in difficulty, and a vocabulary test. Results indicated that (1) most students showed at least partial comprehension on the 2 simpler cloze tests; (2) 95% of students showed some degree of inadequacy in their comprehension of the cloze passage that represented fairly typical academic prose; (3) to be comfortable with prose in the most difficult cloze test, students would need to score about 70% or more on the vocabulary test--most scored below the 70% level; and (4) arts students had the highest scores, and technology students the lowest (differences were slight but statistically significant). Future research will follow the students through their careers at the Open University. (Contains 21 references, and 8 tables and 12 figures of data.) (RS)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED 397 394

Text & Readers Programme

Technical Report #3

PERMISSION TO REPRODUCE AND
DISSEMINATE THIS MATERIAL
HAS BEEN GRANTED BY
M. Macdonald-Ross

TO THE EDUCATIONAL RESOURCES
INFORMATION CENTER (ERIC)

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION
CENTER (ERIC)
☑ This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

Results of the survey of OU students' reading skills

Michael Macdonald-Ross
Bernard Scott

Institute of Educational Technology
The Open University
Milton Keynes MK7 6AA

CS012535

BEST COPY AVAILABLE

Results of the survey of OU students' reading skills

Abstract

As explained in our previous report (Scott and Macdonald-Ross 1995), we used a postal survey to test the reading skills of a sample of students entering the Open University at foundation level. The sample was structured to include approximately equal numbers from the five foundation courses (Arts, Social Sciences, Mathematics, Science, Technology) and from four levels of 'educational qualifications on entry'.

The test materials were sent out to 3000 students; just over 2000 completed forms were returned. The data has now been collated and analysed. Results suggest that many entering students may have some difficulty comprehending academic texts. The results also show significant differences between students grouped by faculty and by level of educational qualification.

The progress of the cohort of students sampled is being monitored throughout the foundation year.

Introduction

During the first 25 years of the Open University's existence, no assessment of entering students' basic skills was carried out. In fact, almost no psychometric data exists for any of the OU's student population. One exception is a study of younger OU students (Woodley and McIntosh 1980) and we refer to some of that data later in this report. Social and personal data about students and courses is gathered routinely by the OU application form and by IET's Student Research Centre.

Each year many students withdraw from or fail their courses (though in general few students fail if they survive to take the exam). Surveys of students' reported reasons for withdrawal have been carried out (Woodley and Parlett 1983, Woodley 1994). Rarely do students say they found courses too difficult, or the prose too difficult to read. Most frequently, they cite workload or domestic problems. Without objective data, which the present work starts to provide for the first time, any assessment of the importance of good basic skills levels (as a factor in student success and course retention rates) could only be speculative.

As a first step in gathering relevant data, we surveyed the reading skills of a large sample of students entering the OU at foundation level and are monitoring their progress through the first year of their studies with the OU.

The tests we used have been described in detail in Scott and Macdonald-Ross 1995. In this report, we describe the structure of the sample and analyse the data so far gathered and discuss the implications.

Michael Macdonald-Ross, Reader in Textual Communication.
Bernard Scott, Research Fellow.

The Reading Tests

The tests consisted of three 'cloze' passages and a vocabulary test (details in Scott and Macdonald-Ross 1995). In a typical cloze task, every fifth or sixth word is deleted from a passage and the subject has to insert what he or she considers to be the most appropriate word. Cloze is particularly suitable for a postal survey since it is relatively robust with respect to time allowed for completion, as long is this is above a sensible minimum. This was one good reason to allow students to complete the tests in their own time; we were also influenced by our knowledge of the general probity and reliability of OU students.

In cloze tests of this kind, scores of about 60% or above show the respondent can read and work on the passage satisfactorily, without assistance. Scores between 40% and 60% show partial comprehension, or the ability to read and work on the passage under supervision. Scores below about 40% show inadequate comprehension (these levels based mainly on work discussed in Bormuth 1967, 1968). The three passages were chosen to be at three different levels of difficulty. Figure 9 shows the differences between the tests as shown by the *Flesch Reading Ease* (RES) scale, a commonly used measure of text readability. RES scores are known to be good predictors of text comprehensibility (see section on readability below).

Passage 1 is part of a basic skills screening test (ALBSU 1993), designed to identify readers who have trouble with basic functional literacy. Passage 2, also from an ALBSU source, is a more difficult passage, roughly at the same level of difficulty as editorials in middlebrow popular newspapers. Passage 3 was chosen as an example of fairly typical academic text. It is an extract from a book review in the *Times Higher Education Supplement* (Turner 1994).

The vocabulary test was included as a useful, quick-to-do additional task. Vocabulary scores are known to correlate highly with more general psychometric measures of verbal abilities. The Woodley and McIntosh study (1980) used a vocabulary scale and showed it to be a good predictor of student success.

Readability: some general points

Readability measures of the type we use are *indices* that predict; they are not meant to explain how students learn, or to teach authors how to write. What they do – and do well – is to predict the difficulty of prose, especially if there is some information about the reading skills of the readers. There are readability formulae designed for every type of prose: all ages, all levels of difficulty, practically every major world language, and so on. There are few metrics in the whole of the social sciences which have been as extensively validated as readability measures such as the Dale-Chall and Flesch RES; their effectiveness and technical reliability have been well demonstrated.

Most formulæ enshrine a balance between ease of application and coverage of linguistic variables. Thus, good predictions are got by 2-variable formulae where one variable is an index of semantic complexity (usually a direct or indirect measure of the vocabulary demands of the text), and the other variable is an index of syntactic complexity (usually sentence length). These two indices combined are highly predictive of prose difficulty as experienced by readers. "The good news is that two language variables, and simple ones at that, account for so much of the variance in the prediction of readable writing" (Klare 1984). More complex formulæ developed for special purposes such as linguistic research have their uses, but add little to the accuracy of prediction.

Because of the extent of the literature on readability, it is not a simple matter to give an overview of the field. There are certainly hundreds of studies on the effect of readability on various age groups, and of its effect under various conditions of motivation, prior knowledge of subject-matter, and its relation to the reading skills of subjects. The main resources to gain

access to this literature are the reviews by George Klare (1963, 1974 and 1984). The topic was also addressed in a review of research on language by Macdonald-Ross (1979).

A few examples of the research on readability may be helpful: Klare and Smart (1973) found a close relationship between readability level of correspondence course material and the probability that correspondence students would persevere and complete their courses. Murphy (1947a,b) and Swanson (1948) found that readership of newspapers goes up with improved readability in split-run studies of newspapers. Sticht and colleagues showed that readability had a significant effect on the use of military manuals (Kern, Sticht & Fox 1970), and Johnson et al (1972) showed the effect of readability on discrepancies in following military procedures. These results suggest that readability measures are as applicable to adults as to younger age groups. Also, the two best-known formulæ, the Flesch Reading Ease Score and the Dale-Chall formula, were actually developed for adult materials and validated against standard criteria for adult readers.

Work on readability in the OU during the 1970s

A certain amount of work was done in the OU in the 1970s, but there were two obstacles to progress. The first was that all readability measures had to be applied by hand, which is obviously laborious, especially considering how much prose the OU produces each year. Nevertheless, in IET's Textual Communication Research Group, Eleanor Smith scored all the four original foundation courses. This work revealed large variations in the level of difficulty that students had to contend with. Now, readability formulæ are available on (for example) the Microsoft Word application, and the textual components of the more recent courses are available on the same software. Since automated formulæ do not give quite the same results as the original hand formulæ, we have done some work to estimate the effect of this discrepancy.

Our hypothesis

We expect that the poorer readers will preferentially drop out or fail courses. This will be most likely to occur in courses which are the least readable, and most heavily overloaded, so that students who are weak readers will have difficulty in completing their study of course material within the time available to them.

The extent of the gap between reading skills of students and the readability of course materials will be identified. The expectation is that large mismatches between reader and text will have significant consequences for the student. Lastly, we can identify the range of readability scores for different authors and subjects, allowing editorial and other skills to be brought to bear on the most difficult passages.

The practical potential for the results of this work to be used for the benefit of the University and its students is considerable, especially at a time when we need to find ways of demonstrating the quality of our teaching systems.

Structure of the sample

Our reading tests were sent out to 3000 entering students. They represent approximately 10% of all students taking courses at foundation level. The sample was structured to ensure representative numbers came from each of the five foundation courses (Arts, Social Sciences, Mathematics, Science, Technology) and from each of four levels of prior educational qualifications: *low* (less than O Level), *lowish* (O Level or single A level), *medium* (A Level in two or more subjects) and *high* (higher education).

See Table 1, page 12.

Procedure

The full text of the survey instrument is shown in the Appendix of our earlier report (Scott and Macdonald-Ross 1995). As well as the reading tests proper, there is a letter of introduction, instructions on how to do cloze and a short cloze passage for practice, with correct answers supplied.

A sample of 3000 students, structured as above, was drawn from the OU's student database and the reading tests were sent out following the standard procedures of the Institute's Student Survey Office. An initial mailing at the end of September 1994 was followed up four weeks later by a reminder postcard to non-responders. Four weeks after that, all outstanding non-responders were sent a duplicate copy of the full survey instrument.

As completed tests arrived back they were date-stamped, then processed for scoring and analysis. The cloze passages were hand marked against a list of correct answers. Only words identical to deleted items were scored as correct. This simple scoring procedure has been shown to be as effective as more sophisticated procedures where synonyms are accepted as correct (Bormuth 1975).

The vocabulary tests were all individually checked for procedural errors and written responses assessed for correctness. The test presents students with a list of forty words ordered by frequency of occurrence. Students were asked to work through the list of words in the order presented and tick those they felt they understood. For the last five words they had ticked, they were asked to supply some form of definition to show they understood its meaning. If a required written definition was missing or incorrect, the count of words ticked was reduced by one mark.

All test scores were entered into a computer data base for analysis.

Results

Results for all students on the four tests used are shown as histograms (Figures 1-4). Means, standard deviations and inter-test correlations are shown in Table 2, p13. Interpretations are as follows.

Passage 1 (Figure 1): as expected for a test of basic functional literacy, almost all the students performed well on this test.

Passage 2 (Figure 2): almost a third of students showed partial comprehension and just over two thirds showed satisfactory comprehension.

Passage 3 (Figure 3): almost a third of students showed inadequate comprehension and nearly two thirds showed partial comprehension. In all, about 95% of all respondents had some difficulty in comprehending this passage.

Vocabulary (Figure 4): to be comfortable with prose as difficult as Passage 3 students would need to score *at least* 70% or more on the vocabulary test. As can be seen in Figure 4, about two-thirds of students scored below this level.

Comparisons between faculties for Passage 3 and Vocabulary are shown graphically in Figures 5-6. As can be seen, Arts students, as a group, consistently performed better than other faculty groups, with Technology students generally performing least well. Analysis of variance (ANOVA) shows the differences between faculties to be significant, and highly significant for Passage 3 and Vocabulary (Table 3, p13). Pairwise comparisons of means were carried out using Tukey's Studentized Range Test, a procedure that carries out t-test type comparisons but with a weighting (based on the number of comparisons being made) that reduces the probability of finding significant differences by chance (Table 4, p14).

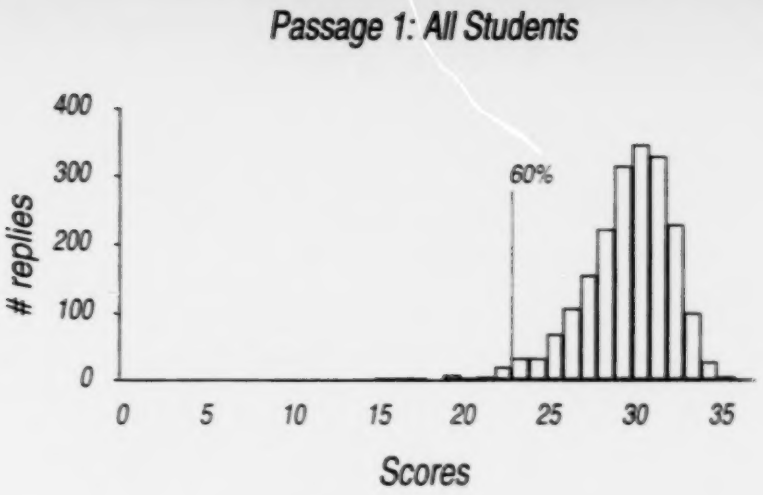


Figure 1

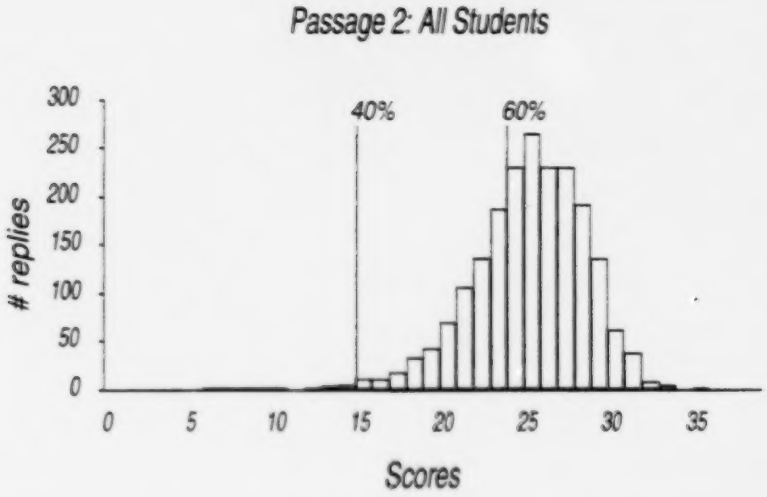


Figure 2

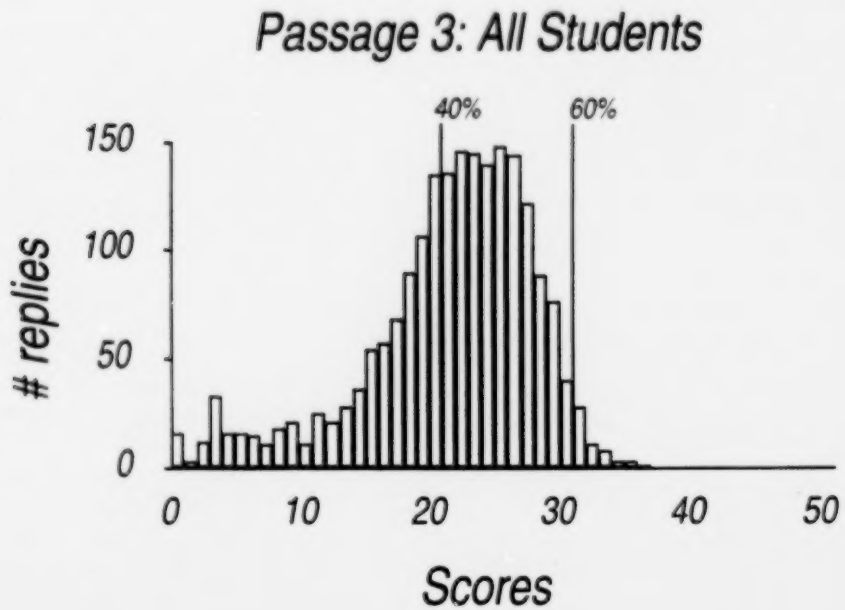


Figure 3

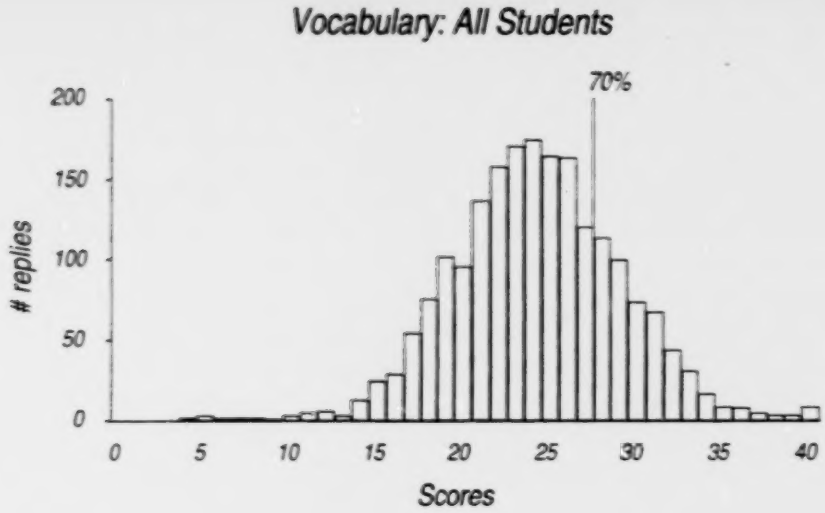


Figure 4

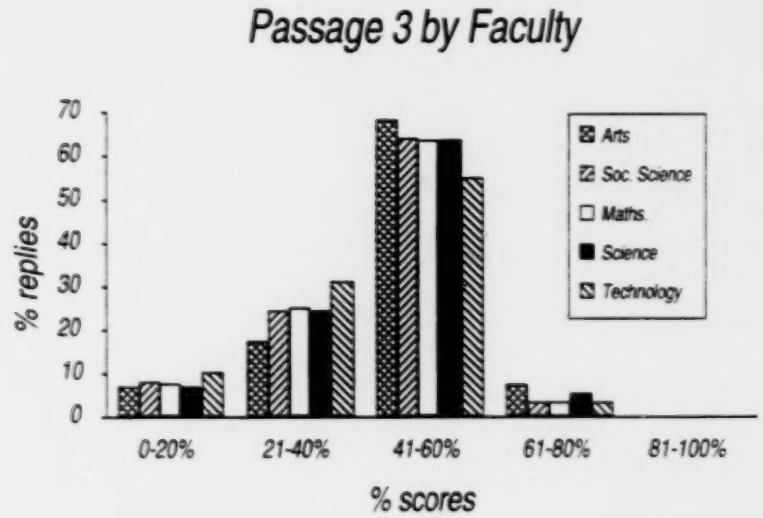


Figure 5

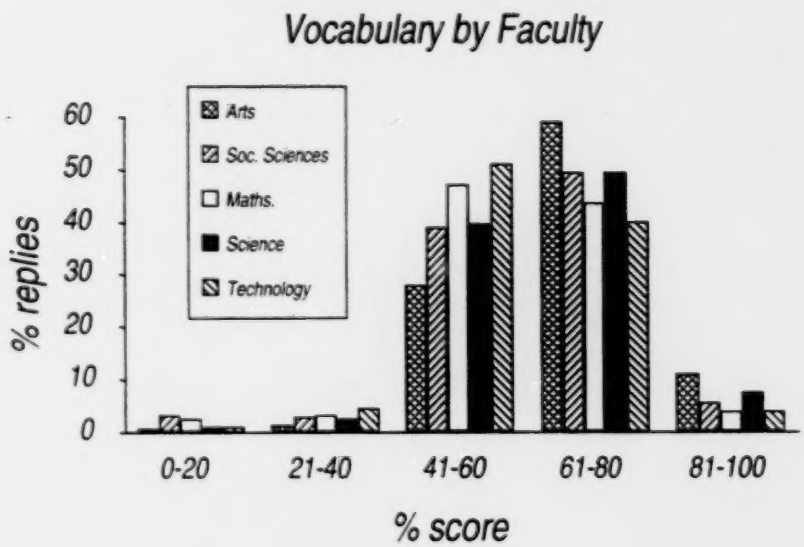


Figure 6

6

Discrimination power of the tests

Passage 3 and the vocabulary tests discriminated between students because they were difficult enough to be testing without being overwhelming. Also, they fairly represent the standards of literacy which are expected of university-level education. All four tests point in the same direction, as shown by the correlations listed in Table 2, p13.

Comparisons between educational levels

Comparisons between students grouped by level of educational qualification are shown in figures 7 and 8. There is a consistent pattern: the higher a students' prior qualifications, the higher his or her scores are likely to be. The relationship is highly significant statistically, as results of ANOVA show in Table 3, p13. Pairwise comparisons of means are shown in Table 5, p15. Means and standard deviations for all sub-samples are shown in Table 6, p16.

Figure 7

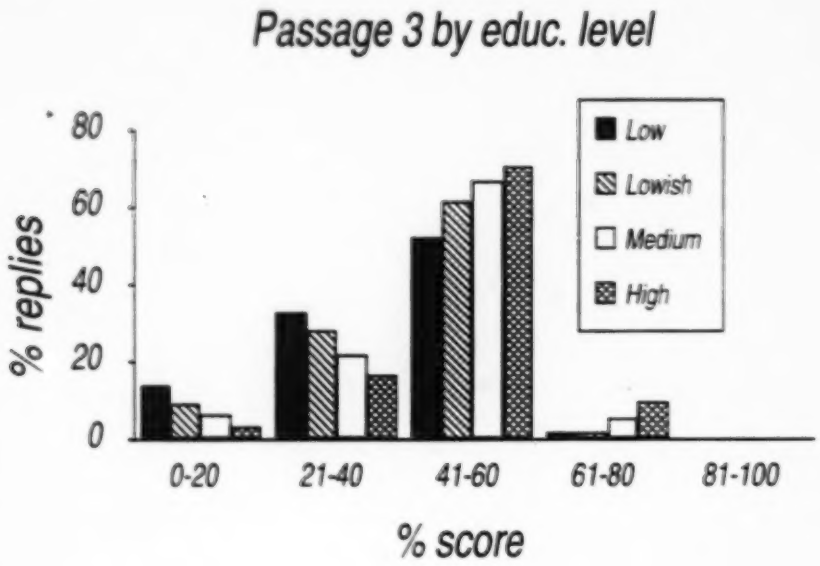
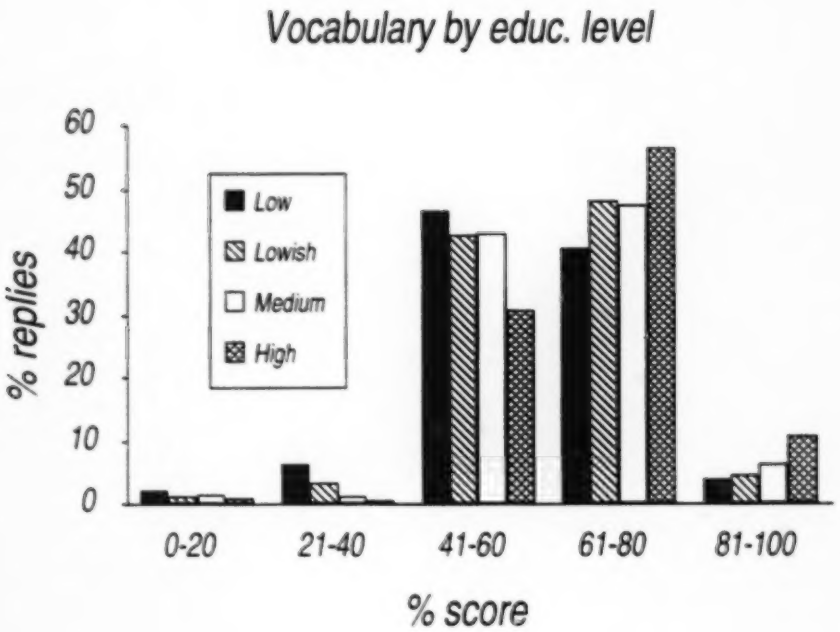


Figure 8



Difficulty of the passages

Opposite is a scale showing the relative difficulty of the three passages as measured by the Flesch Reading Ease formula, a good predictor of the difficulty of prose for adult readers. We will be measuring the readability of samples from the foundation course texts to see what level of difficulty they may pose to our students.

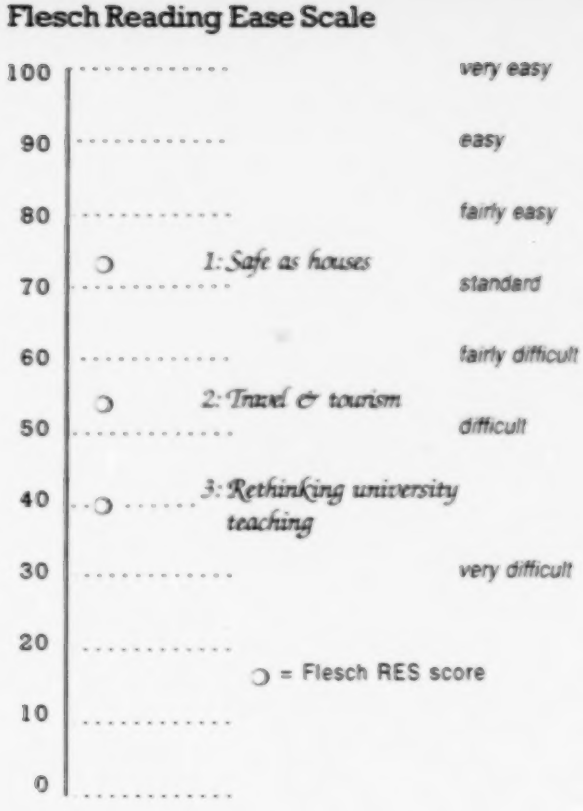


Figure 9 *In the Flesch scale the lower the score the more difficult the prose*

Those who did not return the survey form

Of course, we have no scores for those who did not return the tests. However, there are indications that the reading skills of those who did not return the form are poorer on average than those who did return the form.

One clue is provided by the comparison between early and late returns. Taking the early vs late returns for passage 3 (Figure 10) it is clear that the later returns are scoring the less highly. This difference is highly significant statistically.

The inference is that if scores for all 3,000 were available, the average scores would be lower, especially for passage 3. Table 7, p17, gives the results of ANOVA [analysis of variance] for all three passages and the vocabulary test related to date of return; Table 8, p18, gives Tukey's Studentized Range Test results for dates of return divided into ten groups.

Another, different, approach is to check with final registration data. Final registration is quite important because it commits students to paying off the balance of their fees. The cut-off date for this in 1995 was April 28th. By then students had received a substantial amount of course material and had been required to submit two TMAs and two CMAs.

There is a strong relationship between test scores and final registration [data to be presented in next report]. And, looking at Figure 12, it is clear that a much higher proportion of respondents finally register compared to non-respondents. Thus there is a strong inference that non-respondents would have scored less well than respondents, had we been able to administer the test.

Of course, this is an inference – or an hypothesis if you wish – but not actual data. The actual data shows that those who do not finally register are preferentially those of lower educational rank, and (as we have discussed above, and shown in Figures 7 & 8) educational level correlates with the reading test scores.

Our conclusion is that the tests present a slightly rosy picture, and tend to over-estimate the skills of the population of entering students. Remembering the poor scores for passage 3, we can say that many provisionally registered students will have problems with the level of prose presented in the foundation courses. In our judgement, such difficulties are bound to be at least partially responsible for many drop-outs.

Figure 10

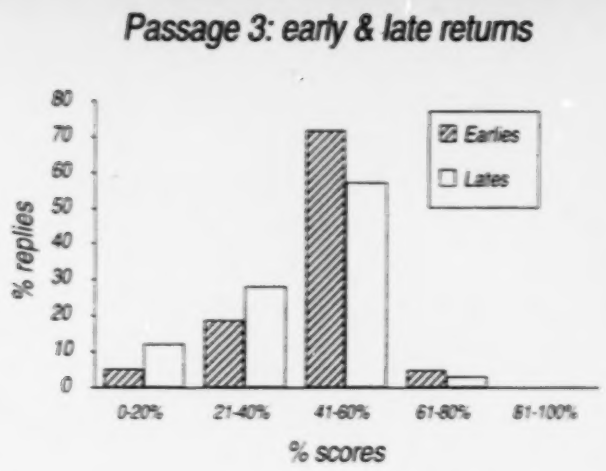


Figure 11

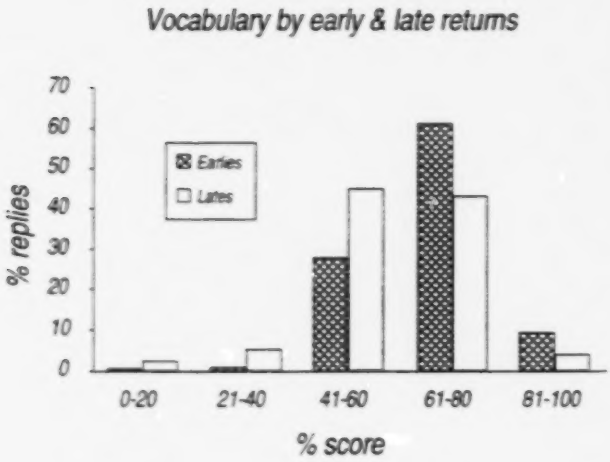
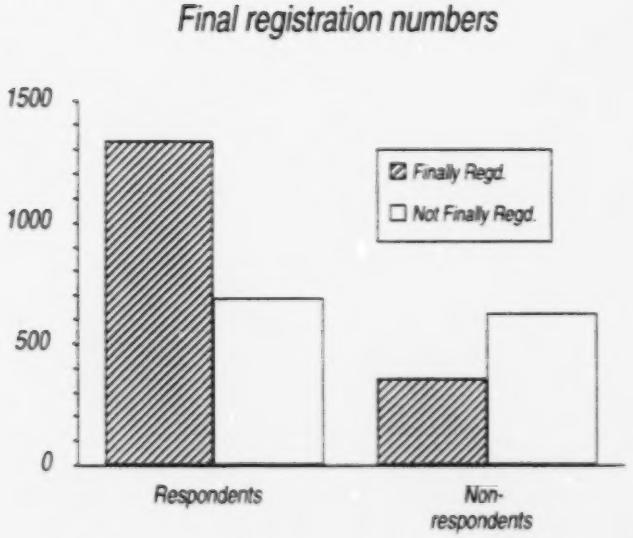


Figure 12



1. At the basic level assessed by Passage 1, all our respondents are literate.
2. However, most (95%) of our respondents have some limitations in the extent to which they can read academic prose as indexed by our Passage 3. The lowest quartile of these students are bound to experience prolonged difficulty in reading our course texts at the required speed and with the necessary comprehension to perform well on the course. To put it another way, most entering students enrolled for OU foundation courses have reading skills which are not at the appropriate level for working with academic prose, and many are seriously deficient.
3. Lest it be thought that our data over-estimates the problem, we have shown some good reasons for thinking that the reading skills of the *non-respondents* may be even more limited.
4. There are significant differences when the data are analysed by faculty.
5. A significant relationship emerges when the data are analysed by educational level. The lower the educational level, the lower the mean test scores. This is important in view of the University's efforts to make itself more open than hitherto. Policy makers will realise that their worthy intention runs against the tenor of our data, and risks an increasing proportion of drop-outs, with all the hidden frustration and visible waste of resources that this entails. There are various actions that might be proposed to reduce this tension.
6. Having established that many students enrolled as of October 1994 are at risk of failing or dropping out, our task now is to monitor the progress of those who remain from our sample. Courses began their teaching in February 1995 and will finish, with exams, in October 1995. Steps along the way include the submission of tutor-marked and computer-marked assignments (TMAs and CMAs), final registration and attendance at summer school.

   In our next report we will present data from final registration figures to show that students scoring poorly in our tests are more likely to drop out than students scoring well.
7. Our other major task is to assess the readability and workload levels of a range of OU courses. This is a tractable problem once course materials are in a suitable electronic format to allow us to use automated procedures.
8. A range of further research studies are being considered and proposals are being prepared. These include surveys of other students on other courses. As well as surveys of reading skills, readability and workload, there is also a need for more fine-grained studies of how OU students interact with OU text-based course materials in print and on screen. The latter is increasingly important as resource-based learning using CD-ROMs is introduced into new courses.

References

ALBSU *Assessing reading and maths: a screening test.* Adult Literacy and Basic Skills Unit, Kingsbourne House, 229/231 High Holborn, London WC1V 7DA.

Bormuth JR *Comparable cloze and multiple-choice comprehension test scores.* Journal of Reading *10,* 291-299, 1967.

Bormuth JR *Close test readability: criterion scores.* Journal of Educational Measurement *5,* 189-196.

Bormuth JR *The cloze procedure: literacy in the classroom* in Page WD (ed) Help for the reading teacher. Washington DC: National Institute of Education 1975.

Kern RP, Sticht TG and Fox LC *Readability, reading ability and readership.* (Professional Paper 17-20) Alexandria VA: Human Resources Research Organisation 1970.

Johnson KH, Relova RP Jr and Stafford JP *An analysis of the relationship between readability of Air Force procedural manuals and discrepancies involving non-compliance with the procedures.* (Document AD 750 917, National Technical Information Service) Air Force Institute of Technology, Air University 1972.

Klare GR *The measurement of readability.* Ames: Iowa State University Press 1963.

Klare GR *Assessing readability.* Reading Research Quarterly *10,* 62-102, 1974-75.

Klare G *Readability* in Pearson PD (ed) Handbook of Reading Research. New York: Longman 1984.

Klare GR and Smart K *Analysis of the readability level of selected United States Armed Forces Institute printed instructional materials.* Journal of Educational Research *67,* 176, 1973.

Macdonald-Ross M *Language in texts* in Lee S Shulman (ed) Review of Research in Education *6,* 229-275. Itasca IL: Peacock 1979.

Murphy DR *Test proves short words and sentences get best readership.* Printer's Ink *218,* 61-64, 1947.

Murphy DR *How plain talk increases readership 45 per cent to 66 per cent.* Printer's Ink *220,* 35-37, 1947.

Scott B and Macdonald-Ross M *A postal survey of OU students' reading skills.* Technical report #2, Text & Readers Programme, IET, The Open University, Milton Keynes MK7 6AA. 1995.

Swanson CE *Readability and readership: a controlled experiment.* Journalism Quarterly *25,* 339-343, 1948.

Taylor WL *Cloze procedure: a new tool for measuring readability.* Journalism Quarterly 30, 415-433, 1953.

Turner D *The importance of reflective classes.* Times Higher Education Supplement. London: Times Newspapers Ltd April 29th 1994.

Vaughan J *Assessing reading: using cloze procedure to assess reading skills.* Adult Literacy and Basic Skills Unit, 229/231 High Holborn, London WC1V 7DA. 1995.

Woodley A *Drop-out: understandable, predictable or merely inevitable?* in Thorpe M and Grugeon D (eds) Open Learning in the Mainstream. Longman 1994.

Woodley A and McIntosh N *The door stood open.* Lewes: Falmer Press 1980.

Woodley A and Parlett M *Student drop-out.* Teaching at a Distance *24,* 2-23, 1983.

*Table 1 Structure of Sample: Faculties*Education Levels*

Sample size=3000; 150 subjects per cell.
Total population at foundation level= c.30,000.

	Foundation Courses				
Education levels	A	D	M	S	T
Low					
Lowish					
Medium					
High					

Faculties:	Arts (A)	c10,000
	Social Sciences (D)	c9,000
	Maths (M)	c3,000
	Sciences (S)	c4,500
	Technology (T)	c4,500
Education Levels:	*Low*	10%
	Lowish	20%
	Medium	30%
	High	30%.

Definitions of the four education levels:

low = no formal qualifications; CSE (other than grade 1), RSA or school leaving certificate.

lowish = CSE (grade 1), GCE Olevel, SCE O grade, GCSE, BEC general certificate or diploma;professional qualification below A level equivalent; GCE A level, SCE H grade, higher school certificate or equivalent in one subject.

medium = GCE A level, SCE H grade, higher school certificate or equivalent in more than one subject; ONC/OND, BEC, BTEC, SCOTBEC, SCOTVEC national certificates and diplomas, TEC and SCOTBEC, SCOTEC higher certificates and diplomas, professional qualification equivalent to A level but below degree level.

high = HNC/HND, BEC, BTEC, SCOTBEC and SCOTVEC higher national certificates and diplomas, TEC and SCOTEC higher certificates and diplomas, teachers certificates or equivalent, university diploma or equivalent, first degree, postgraduate degree, professional qualification equivalent to or above degree level.

These terms are now standard usage throughout OU statistics and survey research.

Table 2

Means and Standard Deviations

All students	total marks	Mean	%	Standard Deviation
Passage 1	36	29.06	80.7	3.15
Passage 2	38	24.77	65.2	3.55
Passage 3	50	20.96	41.9	6.66
Vocabulary	40	23.91	59.8	5.59

Mean: the arithmetic mean
% = mean as percent of total marks available on each test.

Correlations Between Tests

All correlations are highly significant.

Passage 1 and Passage 2	0.43
Passage 1 and Passage 3	0.30
Passage 1 and Vocabulary	0.24
Passage 2 and Passage 3	0.34
Passage 2 and Vocabulary	0.21
Passage 3 and Vocabulary	0.36

Table 3 Summary of ANOVA Results

Passage 1

Source of Variance	DF	F Value	Significance level
Faculty	4	4.62	p<0.001
Ed. Level	3	11.62	p<0.0001
Faculty*Ed. Level	12	0.62	ns

Passage 2

Source of Variance	DF	F Value	Significance level
Faculty	4	2.42	p<0.05
Ed. Level	3	17.39	p<0.0001
Faculty*Ed. Level	12	1.33	ns

Passage 3

Source of Variance	DF	F Value	Significance level
Faculty	4	10.53	p<0.0001
Ed. Level	3	53.88	p<0.0001
Faculty*Ed. Level	12	1.37	ns

Vocabulary

Source of Variance	DF	F Value	Significance level
Faculty	4	20.03	p<0.0001
Ed. Level	3	26.02	p<0.0001
Faculty*Ed. Level	12	0.95	ns

DF = degrees of freedom
ns = not significant

Table 4 Comparisons of Means For Faculties (Tukey Method)

Differences significant at $p<0.05$ are indicated by ***; ns = not significant.
A positive difference indicates first mean is greater than second and vice versa.

Passage 1	Difference Between Means	
Arts v Science	0.19	ns
Arts v Social Science	0.53	ns
Arts v Maths	0.61	ns
Arts v Technology	0.81	***
Science v Social Science	0.35	ns
Science v Maths	0.42	ns
Science v Technology	0.62	***
Social Science v Maths	0.08	ns
Social Science v Technology	0.27	ns
Maths v Technology	0.19	ns
Passage 2		
Arts v Science	0.04	ns
Arts v Social Science	0.28	ns
Arts v Maths	0.48	ns
Arts v Technology	0.60	ns
Science v Social Science	0.44	ns
Science v Maths	0.24	ns
Science v Technology	0.56	ns
Social Science v Maths	−0.19	ns
Social Science v Technology	0.13	ns
Maths v Technology	0.32	ns
Passage 3		
Arts v Science	0.91	ns
Arts v Social Science	1.12	ns
Arts v Maths	1.46	***
Arts v Technology	2.74	***
Science v Social Science	0.21	ns
Science v Maths	0.55	ns
Science v Technology	1.83	***
Social Science v Maths	0.34	ns
Social Science v Technology	1.62	***
Maths v Technology	1.28	***
Vocabulary		
Arts v Science	1.67	***
Arts v Social Science	2.23	***
Arts v Maths	2.79	***
Arts v Technology	2.89	***
Science v Social Science	0.57	ns
Science v Maths	1.13	***
Science v Technology	1.22	***
Social Science v Maths	0.56	ns
Social Science v Technology	0.66	ns
Maths v Technology	0.10	ns

Table 5
Comparisons of Means for Educational Levels (Tukey Method)

Comparisons significant at $p<0.05$ are indicated by ***
ns = not significant. A positive difference indicates first mean is greater than second and vice versa.

	Difference Between Means	
Passage 1		
High v Medium	– 0.33	ns
High v Lowish	0.17	ns
High v Low	1.00	***
Medium v Lowish	0.21	ns
Medium v Low	1.04	***
Lowish v Low	0.83	***
Passage 2		
High v Medium	– 0.15	ns
High v Lowish	0.35	ns
High v Low	1.33	***
Medium v Lowish	0.50	ns
Medium v Low	1.47	***
Lowish v Low	0.97	***
Passage 3		
High v Medium	1.45	***
High v Lowish	3.16	***
High v Low	4.83	***
Medium v Lowish	1.71	***
Medium v Low	3.38	***
Lowish v Low	1.67	***
Vocabulary		
High v Medium	1.58	***
High v Lowish	1.90	***
High v Low	2.98	***
Medium v Lowish	0.32	ns
Medium v Low	1.40	***
Lowish v Low	1.08	***

Table 6

*Means and Standard Deviations (Faculty*Educational Level)*

Passage 1

	Educational Level			
Faculty	Low	Lowish	Medium	High
Arts	29.0 / 2.27	29.6 / 2.32	29.7 / 2.19	29.6 / 3.75
Social Sciences	28.2 / 3.27	29.0 / 3.13	29.2 / 4.19	29.3 / 3.00
Maths	28.1 / 4.69	29.0 / 3.27	29.4 / 2.87	29.0 / 3.28
Science	28.4 / 2.91	29.3 / 2.09	29.6 / 2.56	29.8 / 2.45
Technology	27.9 / 4.10	28.9 / 2.99	28.90 / 3.47	29.0 / 2.89

Passage 2

	Educational Level			
Faculty	Low	Lowish	Medium	High
Arts	23.6 / 4.16	25.0 / 2.87	25.6 / 3.13	25.8 / 2.74
Social Sciences	23.8 / 3.44	24.5 / 3.46	25.2 / 3.67	24.8 / 2.88
Maths	23.5 / 4.19	25.0 / 3.92	25.5 / 3.18	25.0 / 3.61
Science	23.9 / 4.15	25.4 / 3.10	25.6 / 3.35	25.0 / 3.95
Technology	24.2 / 3.55	24.1 / 3.26	24.5 / 3.90	25.0 / 3.28

Passage 3

	Educational Level			
Faculty	Low	Lowish	Medium	High
Arts	18.4 / 7.58	21.4 / 5.91	23.3 / 5.86	25.2 / 4.8
Social Sciences	19.3 / 6.82	19.7 / 7.08	22.1 / 5.42	23.0 / 5.27
Maths	19.1 / 6.52	19.9 / 6.45	21.4 / 6.21	22.3 / 6.17
Science	18.2 / 7.25	20.1 / 6.25	22.3 / 5.78	24.3 / 5.40
Technology	17.3 / 7.82	19.3 / 6.35	19.8 / 7.6	21.3 / 5.85

Vocabulary

	Educational Level			
Faculty	Low	Lowish	Medium	High
Arts	24.5 / 5.02	25.2 / 4.92	25.8 / 5.26	27.6 / 4.71
Social Sciences	21.4 / 6.58	23.3 / 5.89	24.2 / 5.27	25.1 / 6.42
Maths	22.6 / 7.17	22.2 / 4.7	22.7 / 5.34	24.5 / 6.27
Science	22.3 / 6.25	23.9 / 4.78	24.0 / 4.78	26.1 / 4.13
Technology	21.9 / 5.00	23.0 / 4.15	22.7 / 5.68	24.0 / 4.51

Table 7

Summary of ANOVA results comparing early with late returns

Passage 1

Source of Variance	DF	F Value	Significance Level
Date Returned	9	2.15	p<0.02

Passage 2

Source of Variance	DF	F Value	Significance Level
Date Returned	9	2.62	p<0.005

Passage 3

Source of Variance	DF	F Value	Significance Level
Date Returned	9	7.53	p<0.0001

Vocabulary

Source of Variance	DF	F Value	Significance Level
Date Returned	9	8.23	p<0.0001

DF = degrees of freedom

Table 8
Means for students by date of return
(Tukey's Studentized RangeTest)

There were 10 Groups of c.200 Students; Group 1 returned the earliest, Group 10 returned the latest. Only significant differences are listed ($p<0.05$).

Passage 1

There were no significant differences.

Passage 2

	Difference Between Means
Group 2 v Group 5	1.2
Group 3 v Group 5	1.19

Passage 3

Group 1 v Group 7	2.24
Group 1 v Group 8	2.16
Group 1 v Group 9	3.45
Group 1 v Group 10	2.78
Group 2 v Group 7	2.09
Group 2 v Group 8	2.02
Group 2 v Group 9	3.31
Group 2 v Group 10	2.63
Group 3 v Group 8	2.75
Group 3 v Group 9	4.05
Group 3 v Group 10	3.37
Group 4 v Group 9	2.75

Vocabulary

Group 1 v Group 5	2.20
Group 1 v Group 6	2.28
Group 1 v Group 7	2.80
Group 1 v Group 8	2.80
Group 1 v Group 9	3.64
Group 1 v Group 10	3.09
Group 2 v Group 9	2.30
Group 2 v Group 10	1.76
Group 3 v Group 7	2.05
Group 3 v Group 8	2.06
Group 3 v Group 9	2.89
Group 3 v Group 10	2.35
Group 4 v Group 7	1.88
Group 4 v Group 8	1.89
Group 4 v Group 9	2.72
Group 4 v Group 10	2.18

Text & Readers Programme Publications

Technical Reports

1: The revolution in print technology
2: A postal survey of OU students' reading skills
3: Results of the survey of OU students' reading skills
4: OU students' reading skills and final registration

Newsflash

1: OU students' reading skills

OU Students' Reading Skills

results of a survey of 1995 entrants

Michael Macdonald-Ross & Bernard Scott

Birth of a new survey

IET's Michael Macdonald-Ross & Bernard Scott have sampled about 10% (3,000) of this year's entering students from the five foundation courses. The survey used four tests of basic reading skills. The tests were three 'cloze' tests, graded in difficulty, and one vocabulary test.

Cloze tests are a kind of completion test where every fifth or sixth word is deleted and the subject is asked to fill in the blanks. Research has shown this to be one of the most reliable ways of assessing reading skills.

This is believed to be the first time reading skills have been measured by postal methods, and is one of the largest surveys of reading skills in the adult UK population.

Of the 3,000 questionnaires sent out, just over 2,000 were returned to IET, where they were scored and coded by IET's Survey Research Office.

The tests

The first two tests were developed by ALBSU, the Adult Literacy and Basic Skills Unit, and used on our survey by their kind permission. The third test was developed by us from a THES book review.

In cloze tests of this kind scores of 60% or above show the person can read the passage satisfactorily – that is, without assistance. Scores below 40% show inadequate comprehension and intermediate scores (between 40% & 60%) show partial comprehension.

The vocabulary test was developed by the late Hunter Diack, and we are grateful to Mrs Diack for her permission to use her husband's material.

Passage 1

The first passage was designed to identify readers who have trouble with basic functional literacy. As expected, almost all the OU students performed well on this test.

Passage 2

On passage 2, a more difficult passage, almost a third of students showed partial comprehension and just over two thirds showed satisfactory comprehension.

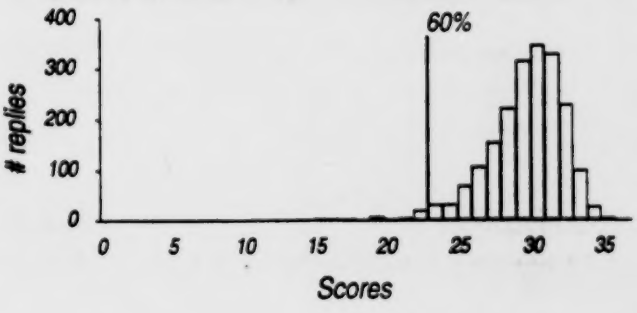
First passage:

Safe as houses

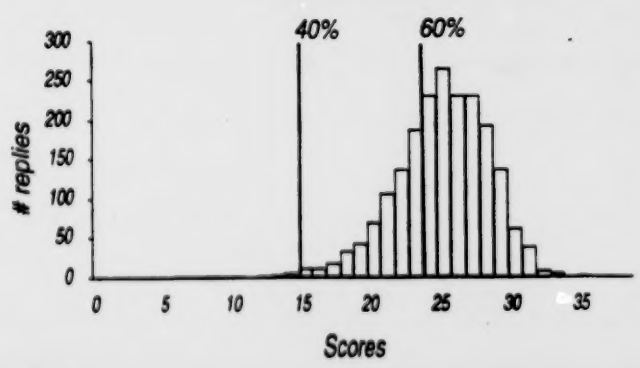
We think of our home as a safe place to be, and are more worried when someone goes out of the house than when they stay at home. In fact _____ people die from accidents in _____ home every year than are _____ on the road or at work. _____ are the causes of these _____ in the home? Many people say _____ of fire as the greatest _____ , but in fact more people _____ from falling than from any _____ cause. Tragic accidents, some fatal _____ caused by children and adults _____ , walking or falling through glass _____ and windows. Poisoning can also _____ illness or death. This may _____ from medicines or from household substances _____ as cleaning materials. Food _____ is also a common danger.

Statistics _____ that most accidents happen on Mondays _____ at weekends. People are at work _____ now and have more leisure _____. They therefore spend more time _____ home. This has led to _____ increase in the number of _____ in the home. The two _____ vulnerable groups of people _____ young children (especially pre-school _____) and the elderly. These groups _____ most time in the home _____ , for example, older children who _____ at school, or adults _____ are out at work during the _____ . The elderly are weaker and _____ slower reactions. Young children are _____ aware of the dangers in _____ home, and are dependent on _____ carers being aware of dangerous _____

Passage 1: All Students



Passage 2: All Students



Passage 3

We developed Passage 3 so that students could try their hand at some fairly typical academic prose. The results are striking.

Almost a third of students showed inadequate comprehension, and nearly two thirds showed partial comprehension. In all, 95% of all who responded showed some degree of inadequacy in their comprehension of this passage. What is more, this passage is by no means the most difficult they will meet in their career at the OU.

We predict that many of the students joining us in the foundation courses will have some difficulty with the prose in our foundation courses.

We believe that students who scored poorly on our third passage will be much more likely to drop out during the year than those who scored over 60%. The progress of all students in the 3,000 sample will be followed through the year to test this prediction.

Difficulty of the passages

Opposite is a scale showing the relative difficulty of the three passages as measured by the Flesch Reading Ease formula, a good predictor of the difficulty of prose for adult readers. We will be measuring the readability of samples from the foundation course texts to see what level of difficulty they may pose to our students.

Vocabulary test

The results of the vocabulary test were consistent with the cloze tests. To be comfortable with prose as difficult as passage 3 students would need to score about 70% or more on the vocabulary test.

Differences between faculties

The results for all faculties follow a similar pattern. Arts students have the highest average scores, and Technology students the lowest. These differences are slight, but they are highly significant statistically.

Our data also show a relationship between students' previous highest educational level and their performance on these reading tests.

The future

We see our work as a way to improve the quality of OU courses, and a way to improve student retention. We hope to follow our sample through their OU careers. Do their reading skills improve, and if so by how much?

It would be interesting to have data on the readability of preparatory courses, and on students who enroll for these courses. Surveys of Business School students (especially European students for whom English is a second language) and Health & Social Welfare students are two more ideas for the future.